

SEVERE CONVECTIVE WEATHER CASES ON THE TERRITORY OF THE CZECH REPUBLIC – MONITORING AND DOCUMENTATION, DATABASE – CURRENT STATUS AND NEAR FUTURE

Roman Volny

*Czech Hydrometeorological Institut, Regional Forecasting Office Ostrava
 K Myslivne 3/2182, 708 00 Ostrava-Poruba, Czech Republic, volny@chmi.cz*

(Dated: 15 September 2009)

I. INTRODUCTION

Documentation of severe weather phenomena (downbursts, funnel clouds and tornadoes, heavy rain or hail) in terms of CR is very closely linked to the end of 20th century. Only a few experts from the CHMI and the Institut of Atmospheric Physics interested in these phenomena initially, particularly M. Setvák and M. Šálek (CHMI). Increased interest can be attributed partly to both these activities and the activities of both amateur meteorologists. (stormchasers or stormspotters). The development of technology helped significantly to these activities (f.e. PC, internet, dig. recording devices, etc.).

II. PRESENTATION OF RESEARCH

Current research strengths of convective storms in the CR is focused on events caused by damage (wind - tornadoes, down(micro)burst, large hails, or heavy rain and flash floods). These severe weather events are studied from the perspective of the causes, structure and development of life storms. The aim of this study is early detection of these events and their location – with a significant contribution of observation (stormchasing or stormspotting) and documentation of these phenomena - creating and maintaining the necessary databases (Table I).

Date	Time and duration	Location	Latitude	Longitude	F-scale	Type
27.8.2006	~ 13:10-13:25 ~ ca 15 min	Napajedla	49.16 N	17.50 E	F0	T
13.8.2006	čas neudán ~ ca 5 min	Teplice (Litvínov-Jirkov- Chomutov)	(50.63 N)	(13.78 E)		F
11.8.2006	~ 11:30-11:38 ~ ca 8 min	JZ od České Lípy	50.66 N	14.53 E		F
24.7.2006	~ ca 19:16 ???	Zlív u Českých Budějovic	(49.07 N)	(14.37 E)		F
12.7.2006	~ 16:40 ???	Vodňany - Křtětice (okr. Strakonice)	49.16 N	14.16 E	F1	(T)

TABLE I: Sample registration of severe convective events within the territory CR.

This database can help to create a vision of the occurrence of these events within a relatively small territory of the CR.

Severe weather cases may be accompanied by the occurrence of tornadoes or funnel clouds within the territory of the CR (Fig. 1).

The occurrence of severe weather cases can be analyzed during the different months of the year. (Fig.2)

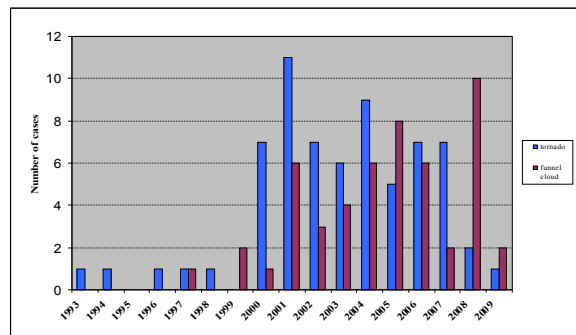


Fig. 1: Annual absolute frequency of documented cases (1993-2009)

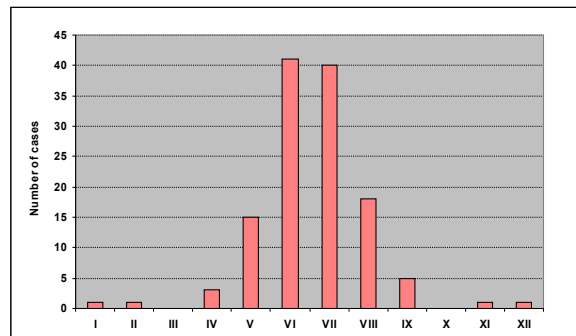


Fig. 2: Monthly absolute frequency of significant convective weather cases (1993-2009)

Another possible presentation of data from this database is a map of these cases (events) – created by GIS software ArcView (Figure 3).

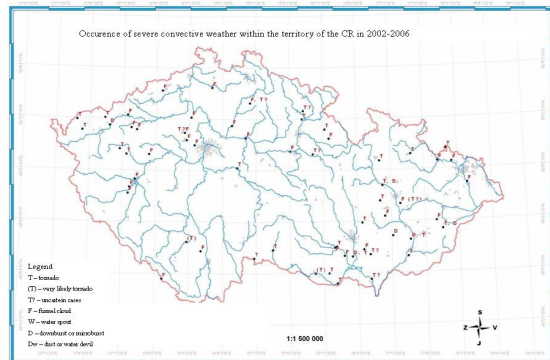


Fig. 3: Map of significant convective events in the CR in 2002-2006

III. RESULTS AND CONCLUSIONS

The database contains a number of interesting severe weather events (since 1996) from the entire Czech Republic (including some historical cases). Further details about cases can be found at the websites.

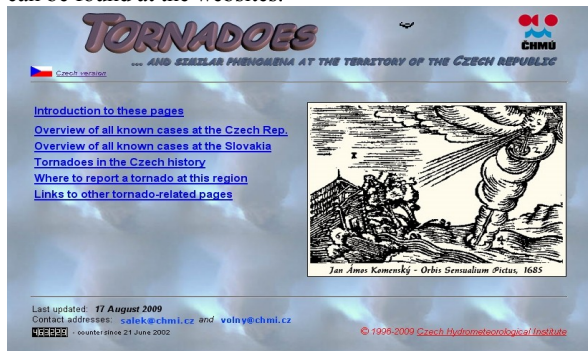


Fig. 4: Website - Tornadoes and similar phenomena at the territory of the Czech Republic

The current form of the website is already inadequate, during the year 2009 will be upgrading...will be clearer and more user-friendly.

One of the latest trends in this activity is growing cooperation between the professional meteorologists and skilled weather enthusiasts from Stormchasing Amateur Society (ASS) and Skywarn Czechoslovak. We can participate in the project European Severe Storm Laboratory (ESSL) - European Severe Weather Database (ESWD).

This cooperation is likely to be a continuation of these activities and other trends in the Czech Republic.

IV. ACKNOWLEDGMENTS

Interest in the issue of monitoring, documentation, records of severe weather phenomena associated with convective activity was and always is significantly from the CHMI and Institute of Atmospheric Physics, which in the past provided support (particularly financial) of the GA CR (205/001451 and 205/04/0114). Thanks also belong to many stormchasers (or spotters) and enthusiasts interested in this problem (ASS, SKYWARN etc.).

V. REFERENCES

- Šálek M., Setvák M., Sulan J., Vavruška F., 2002: Severe convective weather of years 2000 and 2001 on the territory of the Czech Republic. *Meteorol. Bulletin*, 55, Vol. 1,1-8
- Setvák M., Šálek M., Munzar J., 2003: Tornadoes within the Czech Republic: From early medieval chronicles to the "internet society". *Atmos. Res.*, Vol. 67-68C, 607-627.
- Novák P., 2007: The Czech Hydrometeorological Institute's severe storm nowcasting system. *Atm. Res.*, 83, 450-457.
- Volný R., Sulan J., Smolíková Z., 2008: A survey of significant convective weather events within the territory of the Czech Republic in the years 2002-2006. *Meteor. Bulletin*, 61, Vol. 4, 106-112
- Tornadoes within the territory of the Czech Republic.
<http://www.chmi.cz/torn/index-eng.html>
- ESWD – European Severe Weather Database
<http://www.eesl.org/ESWD/>
- Amateur Stormchasing Society
<http://www.bourky.com>